Basic Router Configuration Using Cisco Configuration Professional

Document ID: 111999

Contents

Introduction

This document describes how to use the Cisco Configuration Professional (Cisco CP) in order to set the basic configuration of the router. This includes the configuration of the IP address, default routing, static and dynamic routing, static and dynamic NATing, hostname, banner, secret password, user accounts, and so forth. Cisco CP allows you to configure your router in all kinds of network environments that includes small office home office (SOHO), branch office (BO), regional office, and central site or Enterprise headquarters using an easy−to−use web−based management interface.

Prerequisites

Components Used

The information in this document is based on these software and hardware versions:

- Cisco 2811 Router with Cisco IOS® Software Release 12.4(9)
- Cisco CP Version 2.1

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Install Cisco Configuration Professional

Perform these steps in order to install CCP:

1. Download Cisco CP V2.1 from the Cisco Software Center (registered customers only) and install it on your local PC.
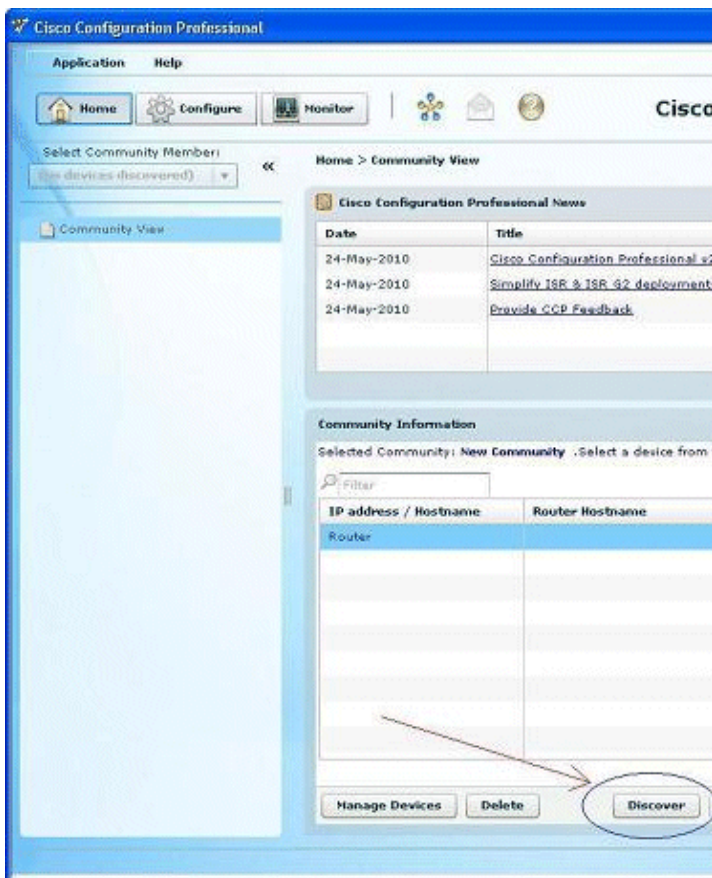
   The latest version of Cisco CP can be found at the CCP website.
2. Launch Cisco CP from your local PC through **Start** > **Programs** > **Cisco Configuration Professional** and choose the **Community** which has the router you want to configure.
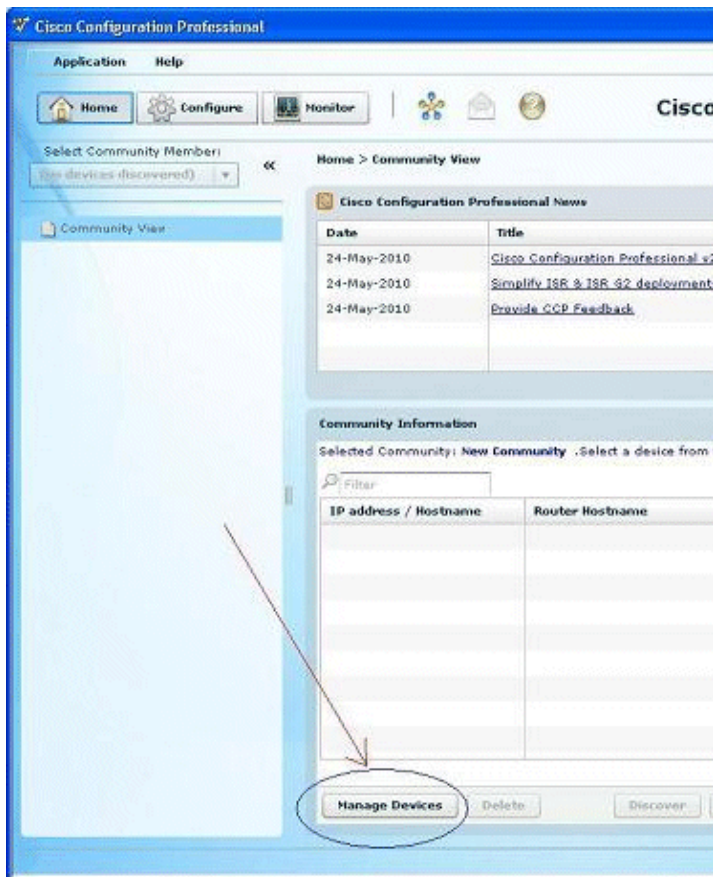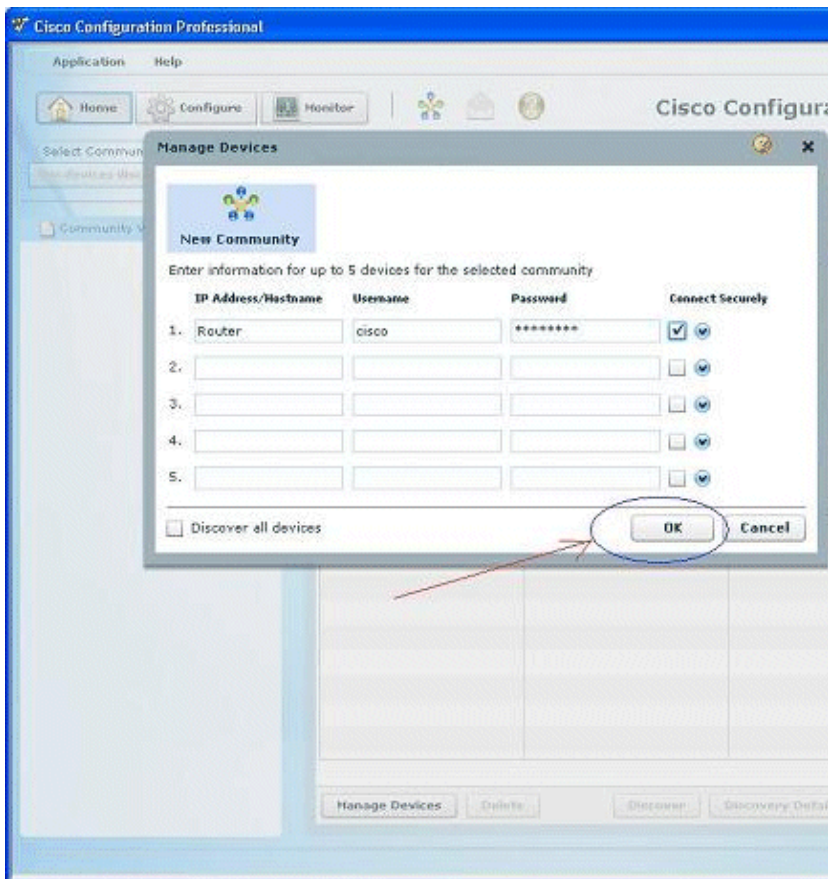
3. In order to discover the device you want to configure, highlight the router and click the **Discover** button.

Note: For information on the Cisco router models and IOS releases that are compatible to CCPv2.1, refer to the Compatible Cisco IOS releases section.

Note: For information on the PC requirements that runs CCPv2.1, refer to System Requirements section

Router Configuration to Run Cisco CP

Perform these configuration steps in order to run Cisco CP on a Cisco router:

1. Connect to your router using Telnet, SSH, or through the console.

   Enter global configuration mode using this command:

   ```
   Router(config)#enable
   Router(config)#
   ```
2. If HTTP and HTTPS are enabled and configured to use nonstandard port numbers, you can skip this step and simply use the port number already configured.

   Enable the router HTTP or HTTPS server using these Cisco IOS Software commands:

   ```
   Router(config)# ip http server
   Router(config)# ip http secure-server
   Router(config)# ip http authentication local
   ```
3. Create a user with privilege level 15:

   ```
   Router(config)# username <username> privilege 15 password 0 <password>
   ```

   Note: Replace *<username>* and *<password>* with the username and password that you want to configure. Do not use the same password for your user and enable passwords.
4. Configure SSH and Telnet for local login and privilege level 15.

   ```
   Router(config)# line vty 0 4
   Router(config-line)# privilege level 15
   Router(config-line)# login local
   Router(config-line)# transport input telnet
   Router(config-line)# transport input telnet ssh
   Router(config-line)# exit
   ```
5. (Optional) Enable local logging to support the log monitoring function:

   ```
   Router(config)# logging buffered 51200 warning
   ```

Requirements

This document assumes that the Cisco router is fully operational and configured to allow the Cisco CP to make configuration changes.

For complete information on how to start using the Cisco CP, refer to Getting Started with Cisco Configuration Professional.

Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.
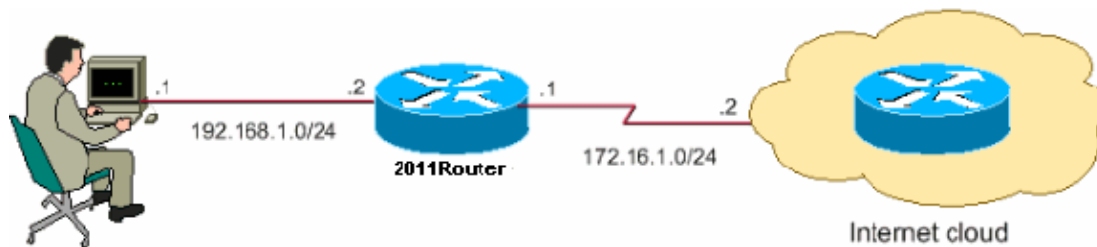
Configure

In this section, you are presented with the information to configure the basic settings for a router in a network.

Note: Use the Command Lookup Tool (registered customers only) to obtain more information on the commands used in this section.

Network Diagram

This document uses this network setup:

Note: The IP addressing schemes used in this configuration are not legally routable on the Internet. They are RFC 1918 addresses which have been used in a lab environment.

Interface Configuration

Perform these steps in order to configure the interfaces of a Cisco router:

1. Click **Home** in order to go to the Cisco CP homepage.

   The Cisco CP homepage provides information such as the hardware and software of the router, feature availability, and a configuration summary.
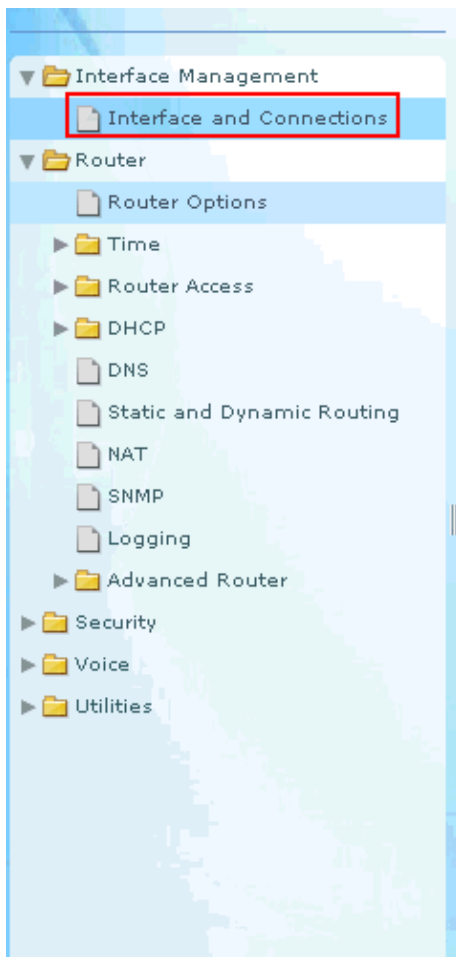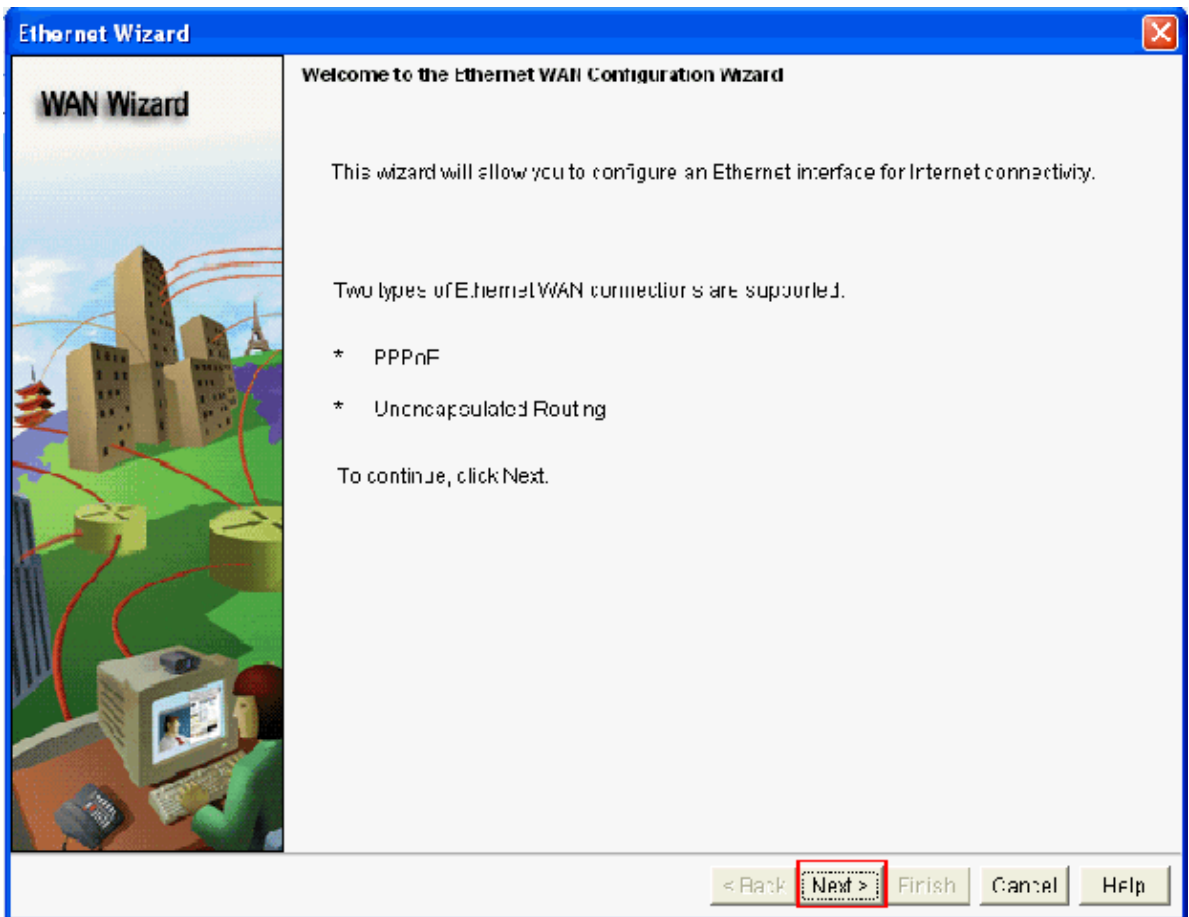

2. Choose **Configure** > **Interface Management** > **Interfaces and Connections** > **Create Connection** in order to configure the WAN connection for the interface.

   As an example, for FastEthernet 0/1, choose the **Ethernet** option and click **Create New Connection**.
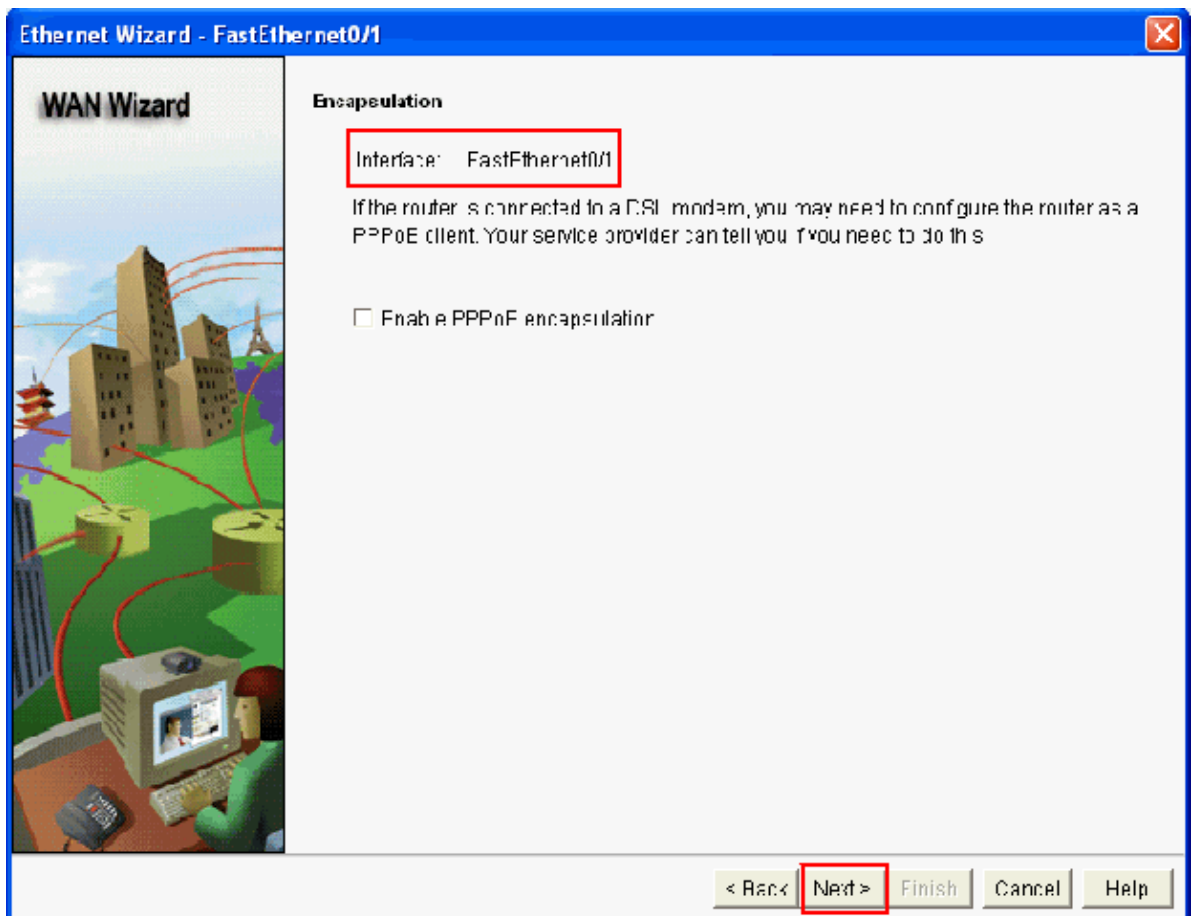
   Note: For other types of interfaces like **Ethernet**, choose the respective interface type and click **Create New Connection** to proceed.
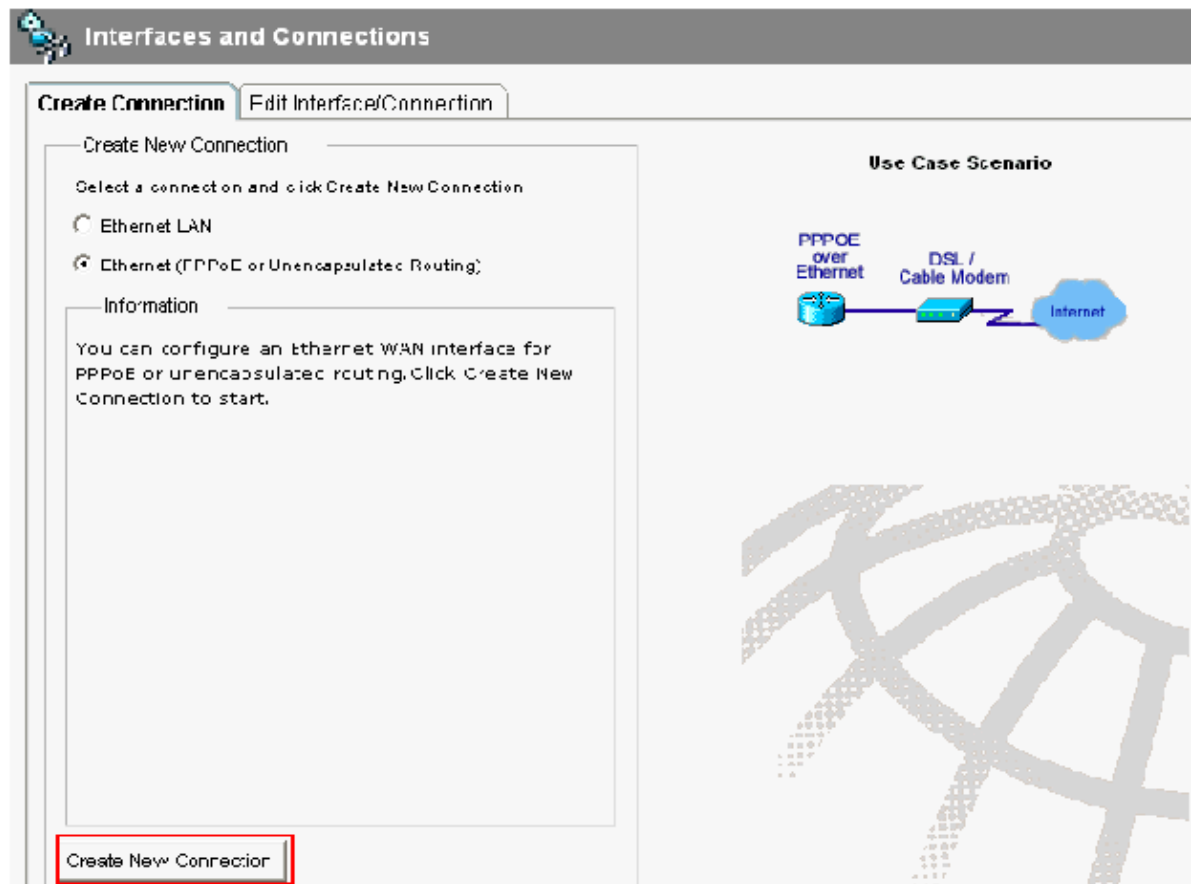
3. Click **Next** in order to proceed once this interface appears:

Ethernet Wizard

WAN Wizard

Welcome to the Ethernet WAN Configuration Wizard

This wizard will allow you to configure an Ethernet interface for Internet connectivity.

Two types of Ethernet WAN connections are supported.

* PPPoE

* Unencapsulated Routing

To continue, click Next.

< Back **Next >** Finish Cancel Help

4. Choose **FastEthernet 0/1** (desired) from the Available Interfaces option and click **Next**.

Ethernet Wizard - FastEthernet0/1

WAN Wizard

Encapsulation

Interface: FastEthernet0/1

If the router is connected to a DSL modem, you may need to configure the router as a PPPoE client. Your service provider can tell you if you need to do this.

☐ Enable PPPoE encapsulation

< Back **Next >** Finish Cancel Help

5. Specify the static IP address with the corresponding subnet mask for the interface and click **Next**.

6. Configure the default routing with optional parameters such as the next hop IP address (172.16.1.2 as per network diagram) supplied by the ISP and click **Next**.

Ethernet Wizard - FastEthernet0/1

WAN Wizard

Advanced Options

There is no static route configured on the router. A default static route ensures that outgoing traffic will always be sent to another router on the network

☑ Default Static Route

   ○ Use this Interface as Forwarding Interface

   ◉ Next Hop IP address   172.16.1.2

   (If your ISP has given you a next hop IP address enter it here)

PAT is not configured on any router interface. Configuring PAT allows multiple devices on the LAN to share this WAN connection

☐ Port Address Translation

   LAN Interface to be translated   FastEthernet0/0

< Back   Next >   Finish   Cancel   Help

This window appears and shows the configuration summary configured by the user. Click **Finish**.

Note: The connectivity of the configuration can be checked by checking the checkbox next to **Test the connectivity after configuring**. This is an optional feature available.
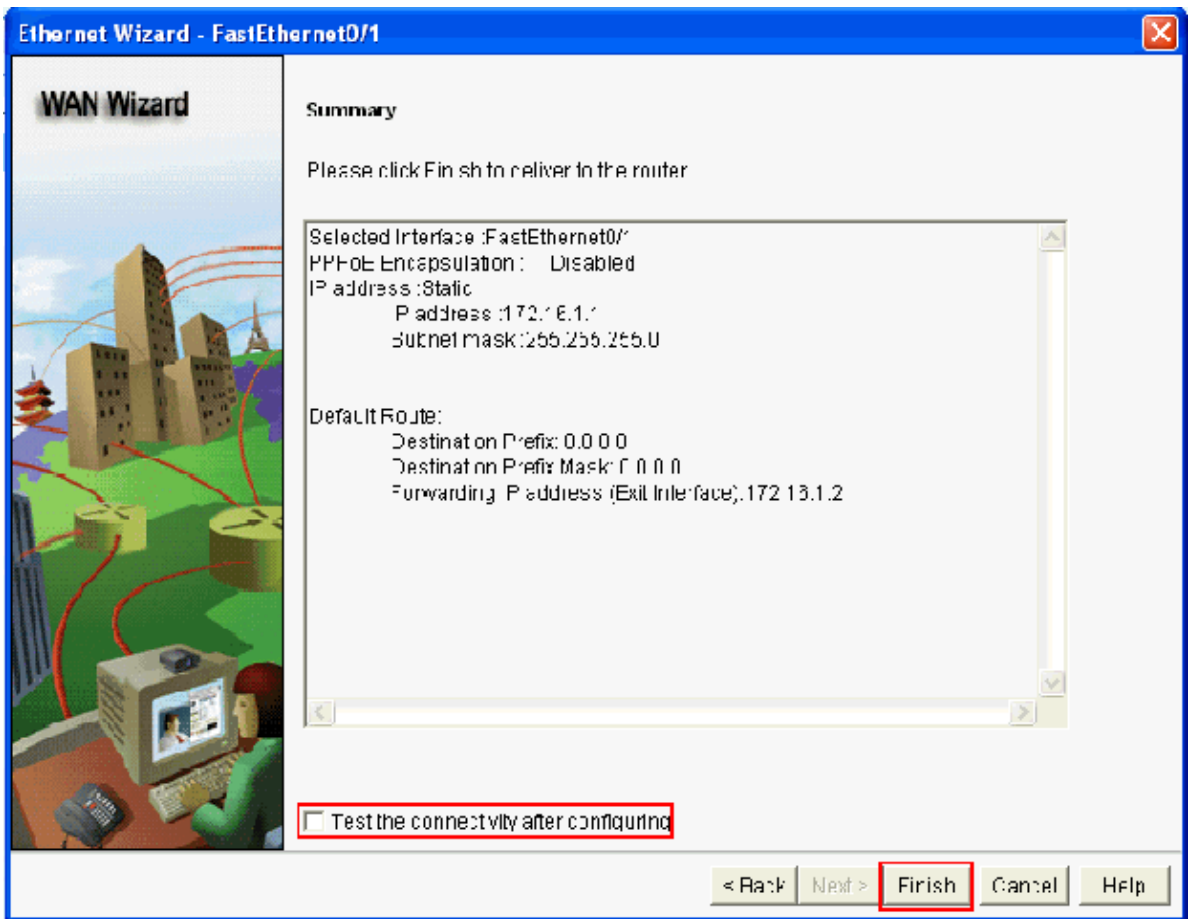
This window appears and shows the command delivery status to the router. Otherwise, it displays errors if the command delivery fails due to incompatible commands or unsupported features.
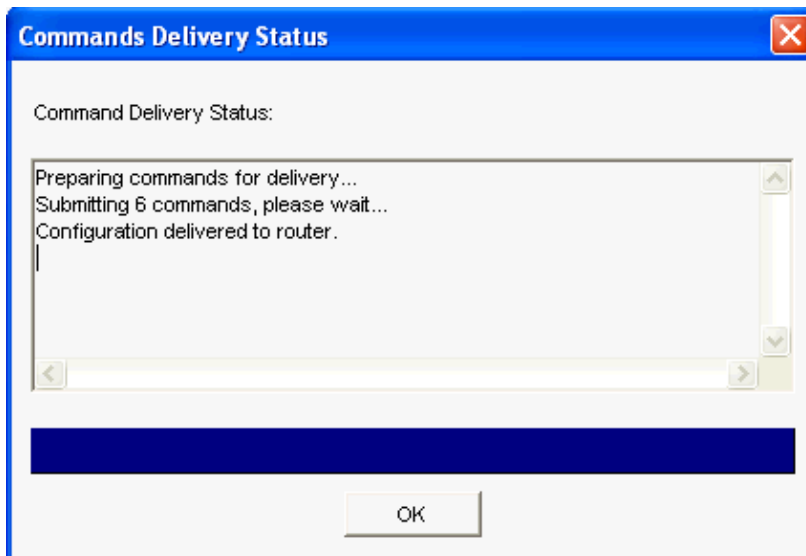
7. Choose **Configure** > **Interface Management** > **Interfaces and Connections** > **Edit Interfaces/Connections** in order to add/edit/delete the various interfaces.
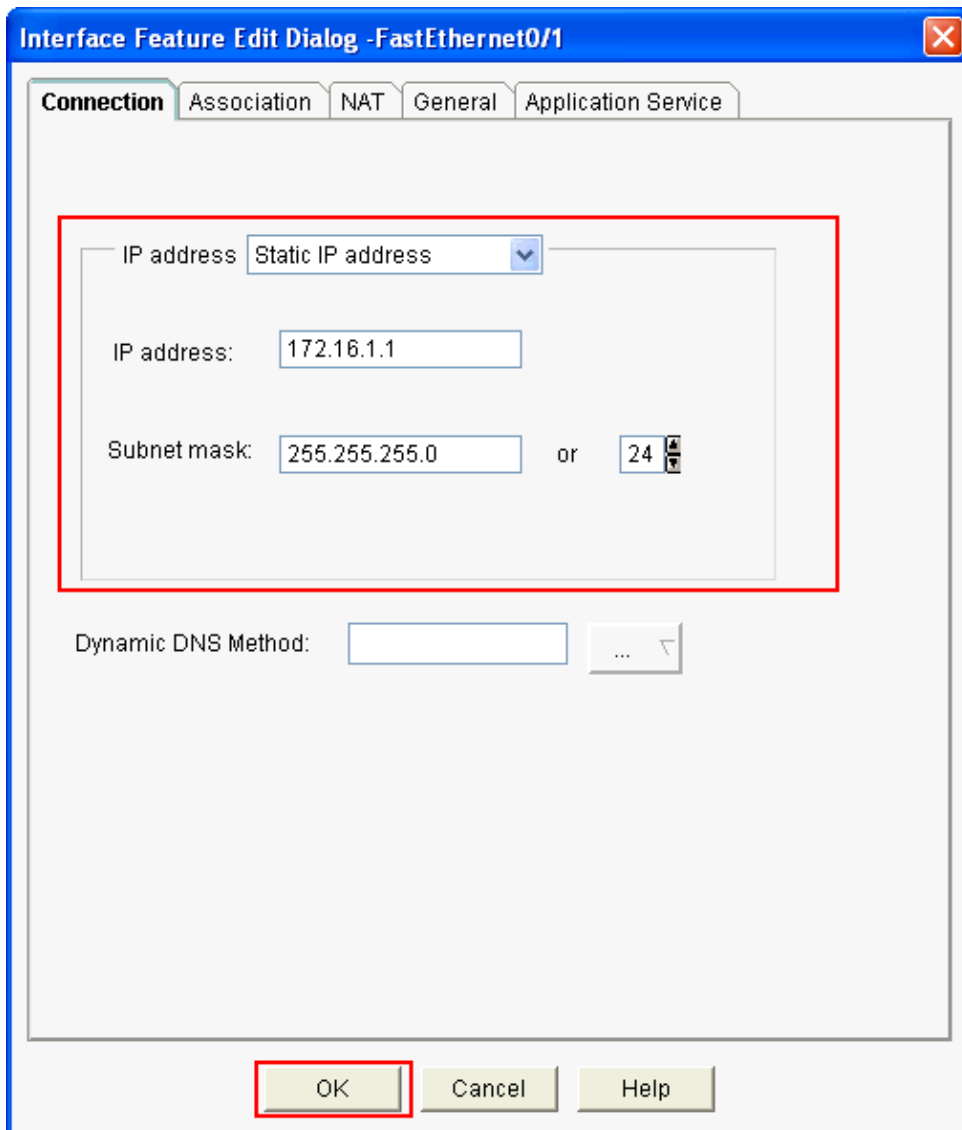
Highlight the interface with which you want to make changes and click **Edit** if you want to edit or change the interface configuration. Here, you can change the existing static IP address.

NAT Configuration

Dynamic NAT Configuration

Perform these steps in order to configure the dynamic NAT in a Cisco router:
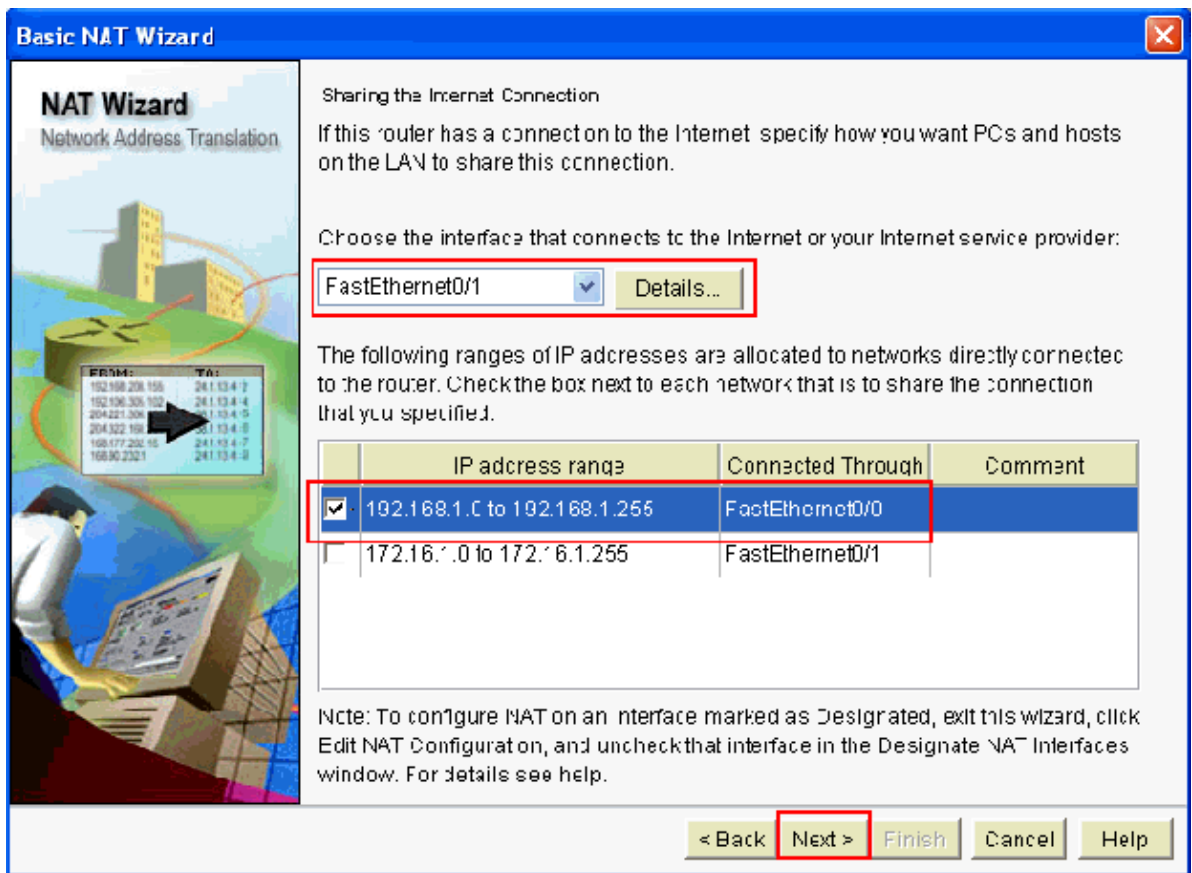
1. Choose **Configure** > **Router** > **NAT** > **Basic NAT** and click **Launch the selected task** in order to configure basic NATing.
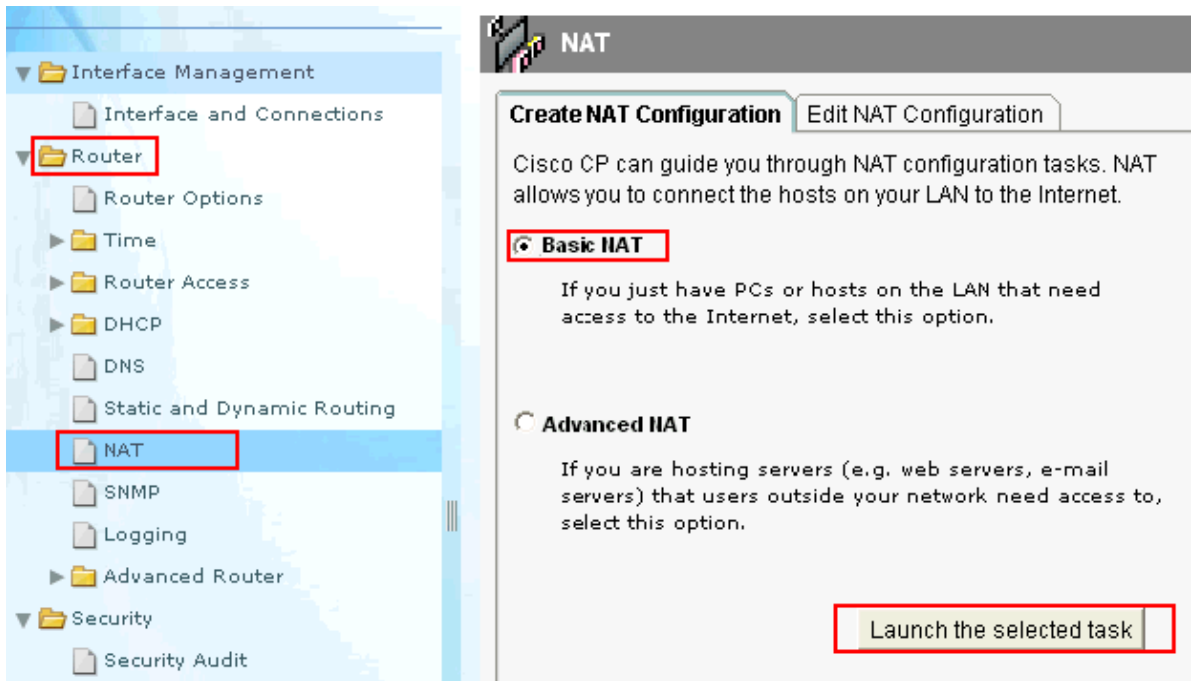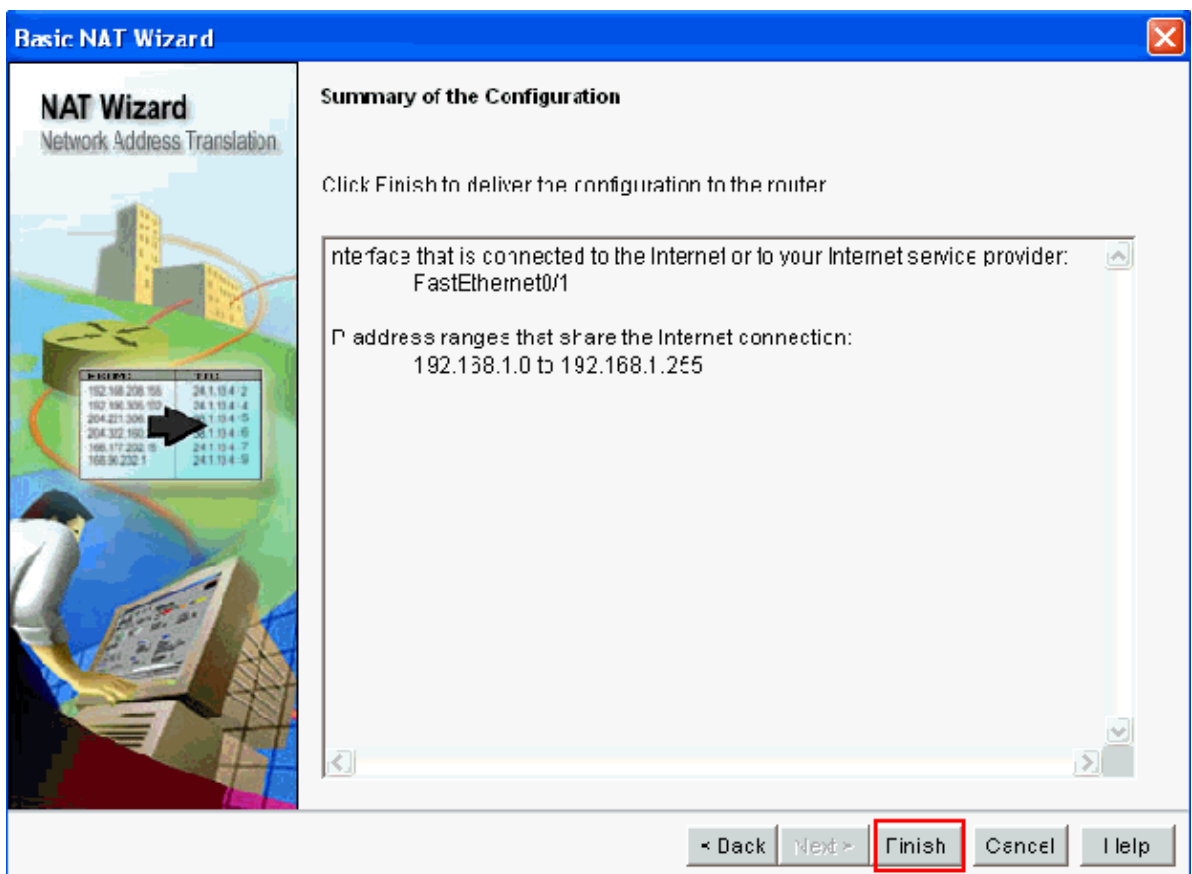
2. Click **Next**.
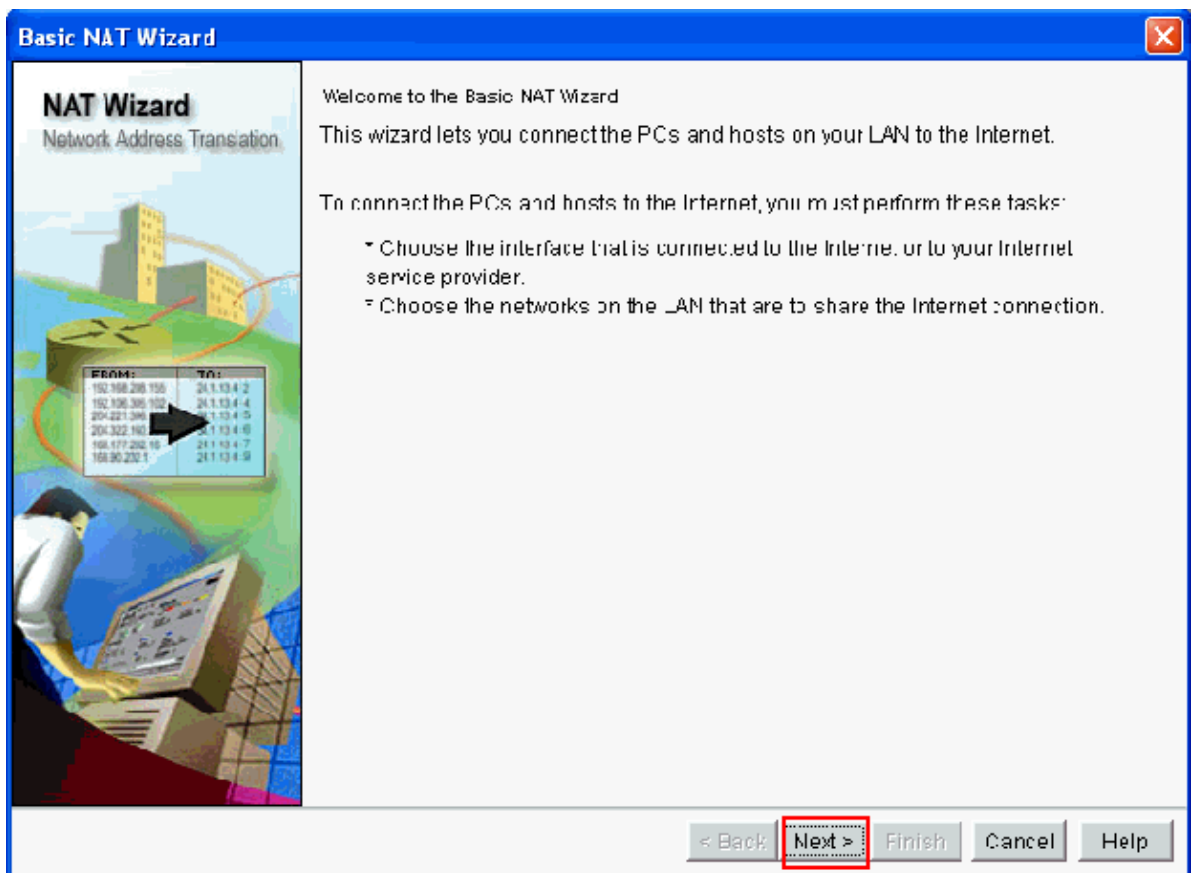
3. Choose the interface that connects to the Internet or your ISP and choose the IP address range to which Internet access is to be shared. After choosing this information, click **Next** as shown here:
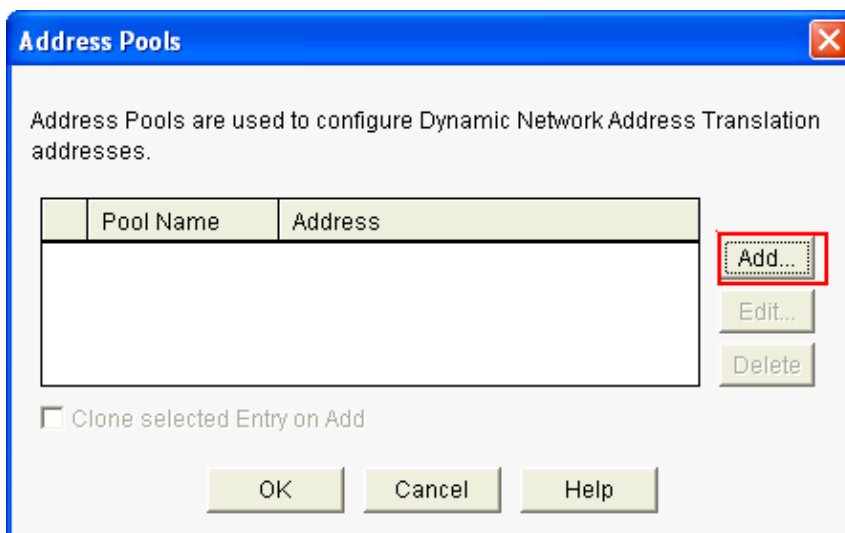
4. This window appears and shows the configuration summary configured by the user. Click **Finish**.
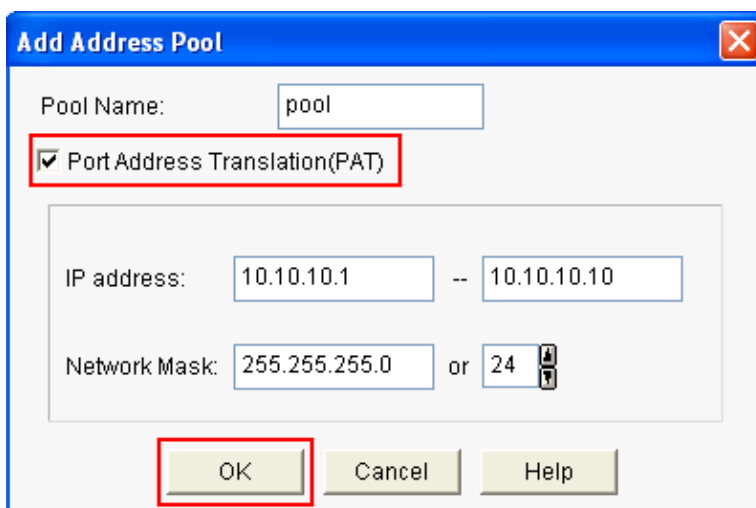

5. The Edit NAT Configuration window shows the configured dynamic NAT configuration with the translated IP address overloaded (PATing). If you want to configure the dynamic NATing with address pool, click **Address Pool**.
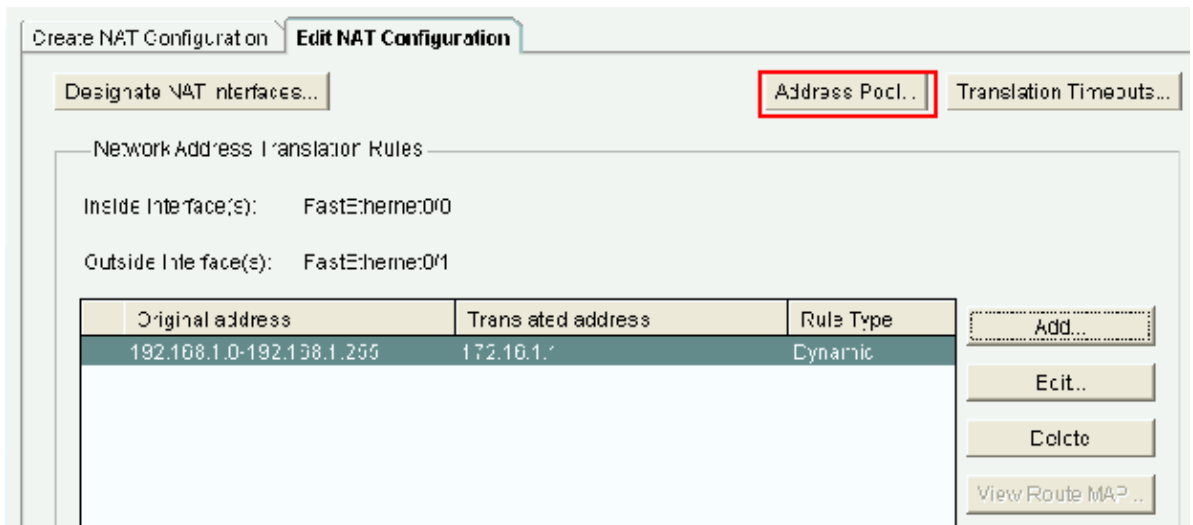
6. Click **Add**.

Here, information such as the pool name and IP address range with netmask are provided. There can be times when most of the addresses in the pool have been assigned, and the IP address pool is nearly depleted. When this occurs, PAT can be used with a single IP address in order to satisfy additional requests for IP addresses. Check **Port Address Translation (PAT)** if you want the router to use PAT when the address pool is close to depletion. Click **OK**.
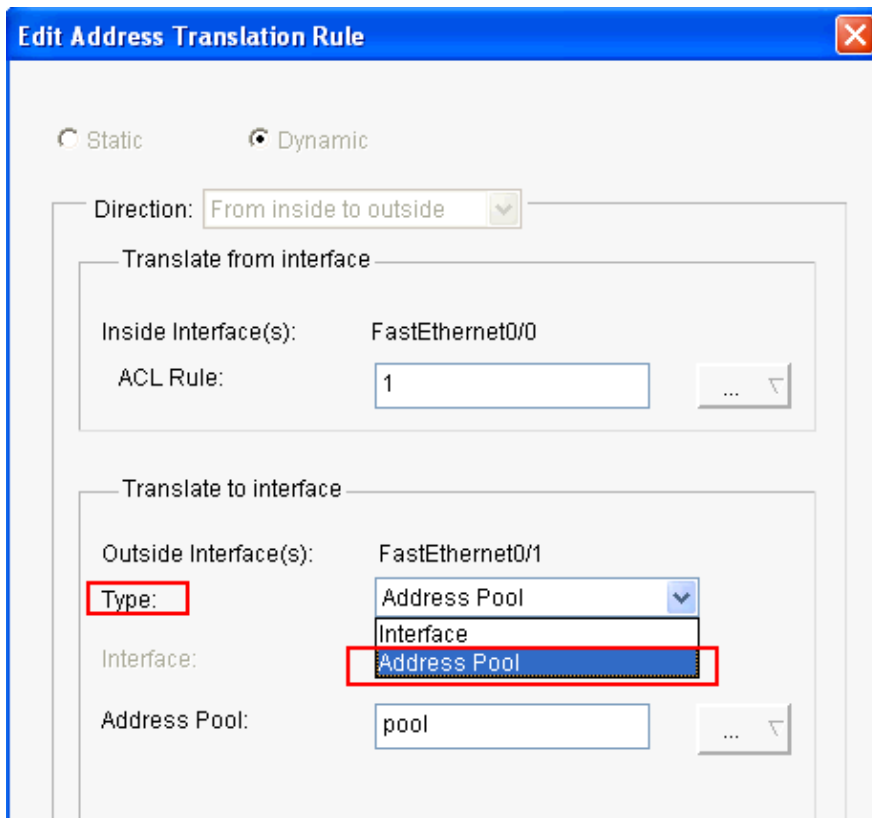

7. Click **Add**.
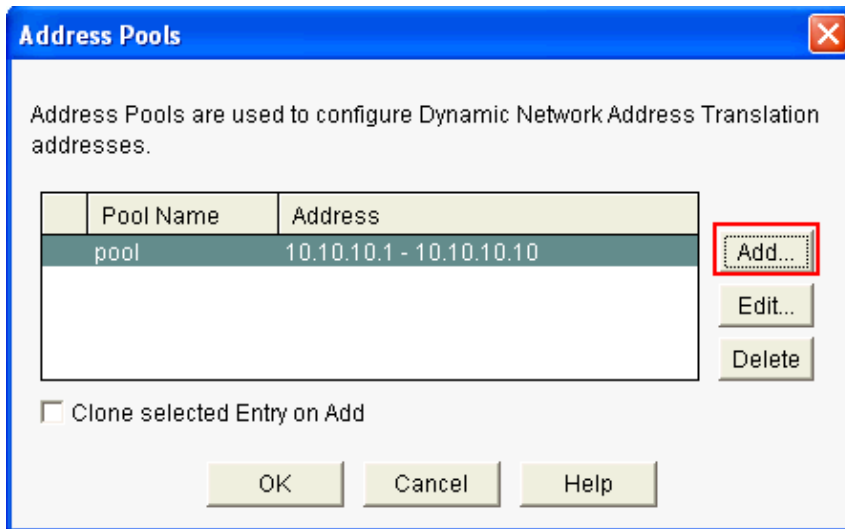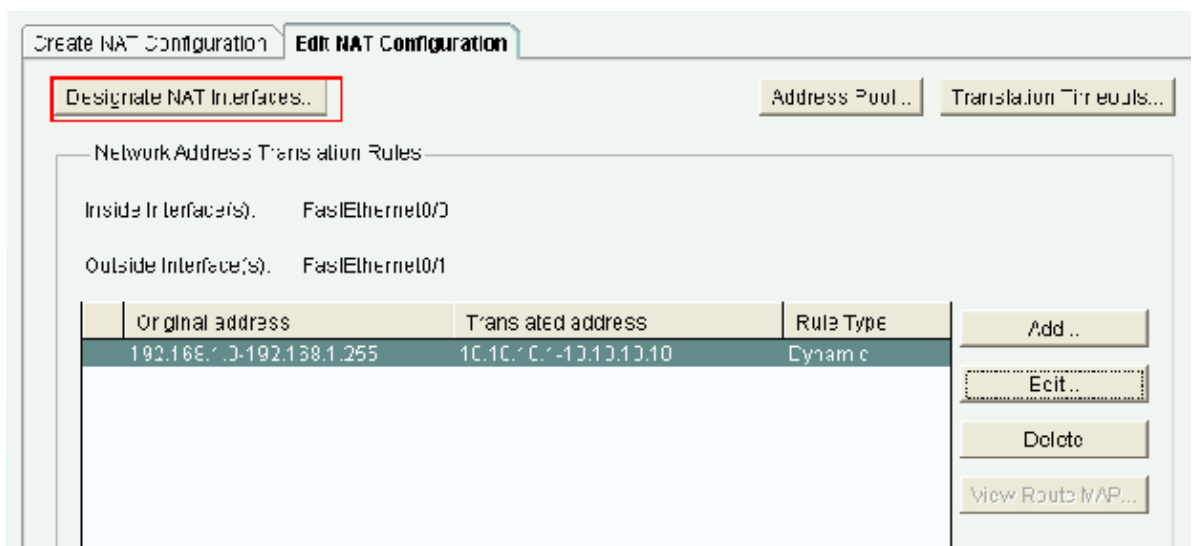
8. Click **Edit**.
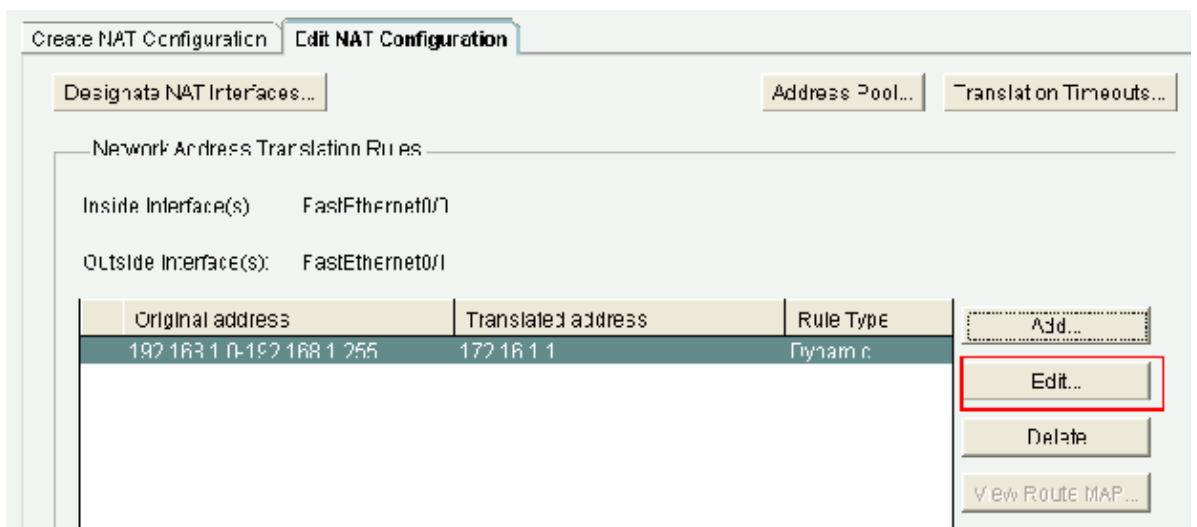
9. Choose **Address Pool** in the Type field, provide the name to the Address Pool as **pool**, and click **OK**.

10. This window shows the configuration for dynamic NATing with the address pool. Click **Designate NAT Interfaces**.

Use this window in order to designate the inside and outside interfaces that you want to use in NAT translations. NAT uses the inside and outside designations when it interprets translation rules, because translations are performed from inside to outside, or from outside to inside.

Once designated, these interfaces are used in all NAT translation rules. The designated interfaces appear above the Translation Rules list in the main NAT window.
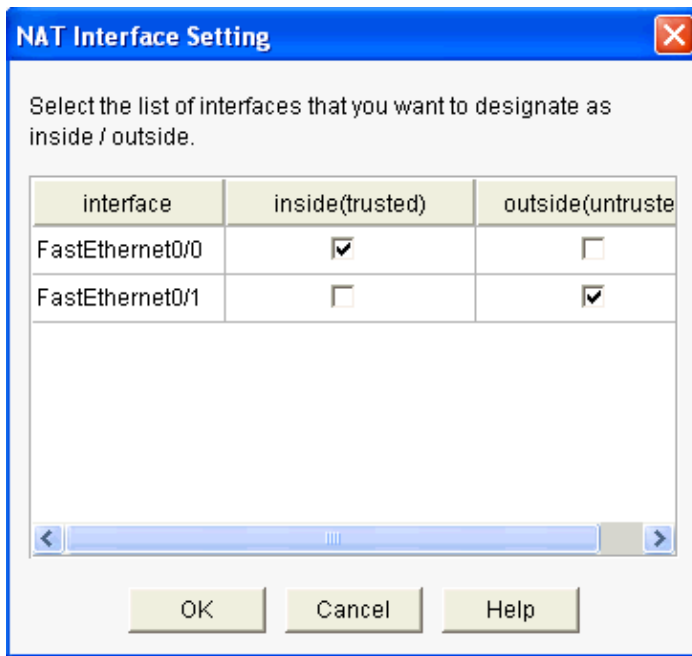
Static NAT Configuration

Perform these steps in order to configure static NAT in a Cisco router:

1. Choose **Configure** > **Router** > **NAT** > **Edit NAT Configuration** and click **Add** in order to configure static NATing.
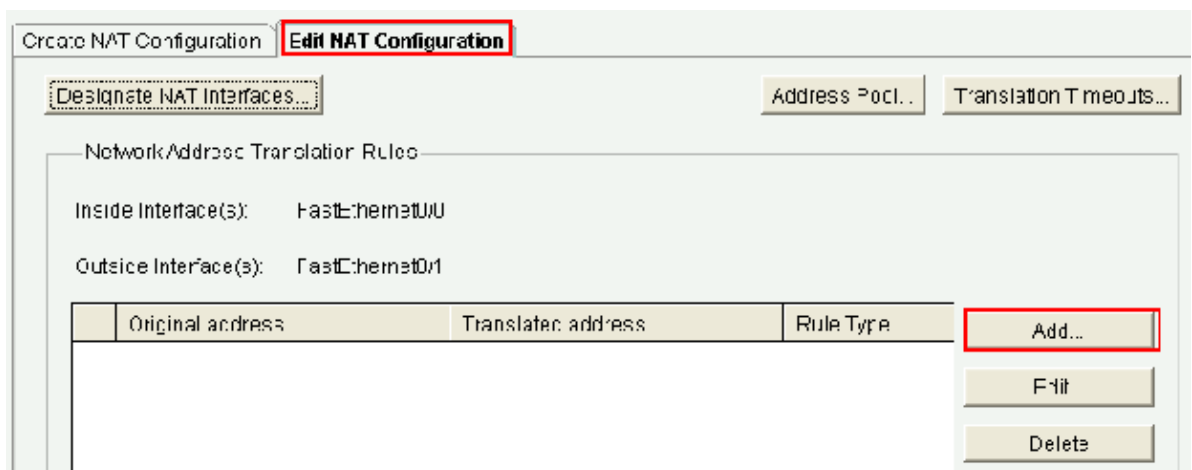
2. Choose the **Direction** either from inside to outside or from outside to inside, and specify the inside IP address to be translated under **Translate from Interface**. For the **Translate to Interface** area, choose the Type:

   ♦ Choose **IP Address** if you want the **Translate from Address** to be translated to an IP address defined in the IP Address field.
   ♦ Choose **Interface** if you want the **Translate from Address** to use the address of an interface on the router. The **Translate from Address** is translated to the IP address assigned to the interface that you specify in the Interface field.

   Check **Redirect Port** if you want to include port information for the inside device in the translation. This enables you to use the same public IP address for multiple devices, as long as the port specified for each device is different. You must create an entry for each port mapping for this Translated to address. Click **TCP** if this is a TCP port number and click **UDP** if it is a UDP port number. In the Original Port field, enter the port number on the inside device. In the Translated Port field, enter the

port number that the router is to use for this translation. Refer to the Allowing the Internet to Access Internal Devices section of Configuring Network Address Translation: Getting Started.

This window shows the static NATing configuration with port redirection enabled:
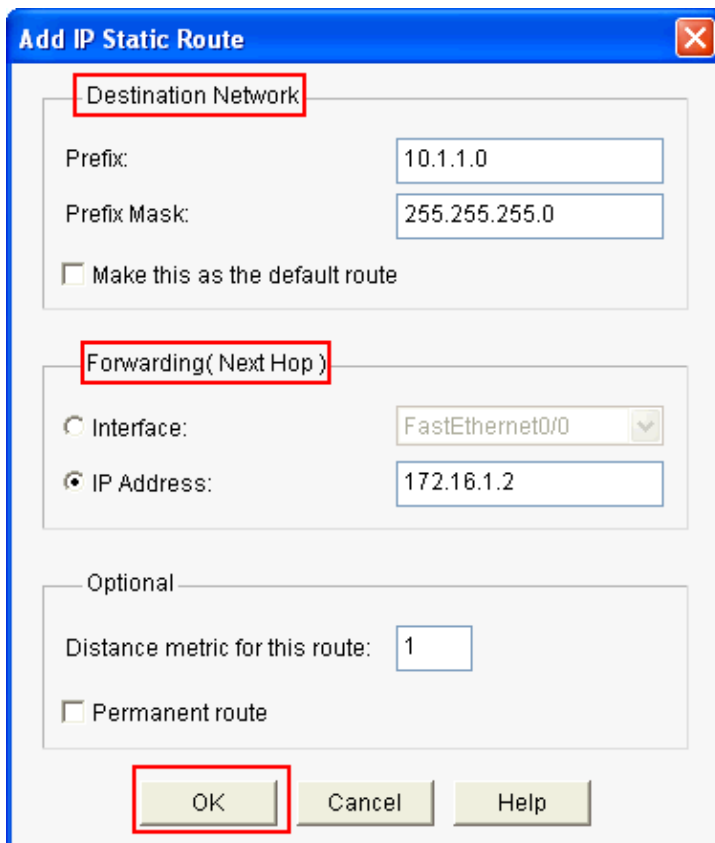
Routing Configuration

Static Routing Configuration

Perform these steps in order to configure static routing in a Cisco router:

1. Choose **Configure** > **Router** > **Static and Dynamic Routing** and click **Add** in order to configure static routing.

2. Enter the Destination Network address with mask and choose either outgoing interface or next hop IP address.

This window shows the static route configured for the 10.1.1.0 network with 172.16.1.2 as the next hop IP address:

Dynamic Routing Configuration

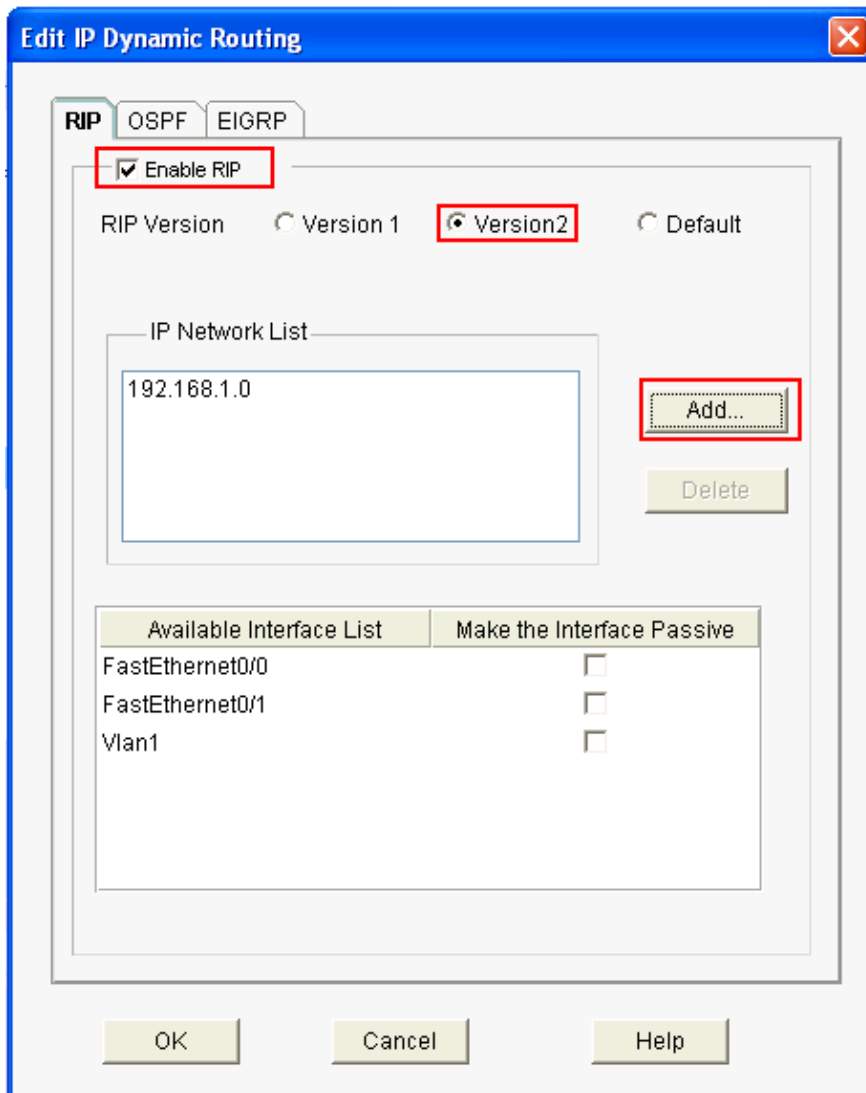Perform these steps in order to configure the dynamic routing in a Cisco router:

1. Choose **Configure** > **Router** > **Static and Dynamic Routing**.
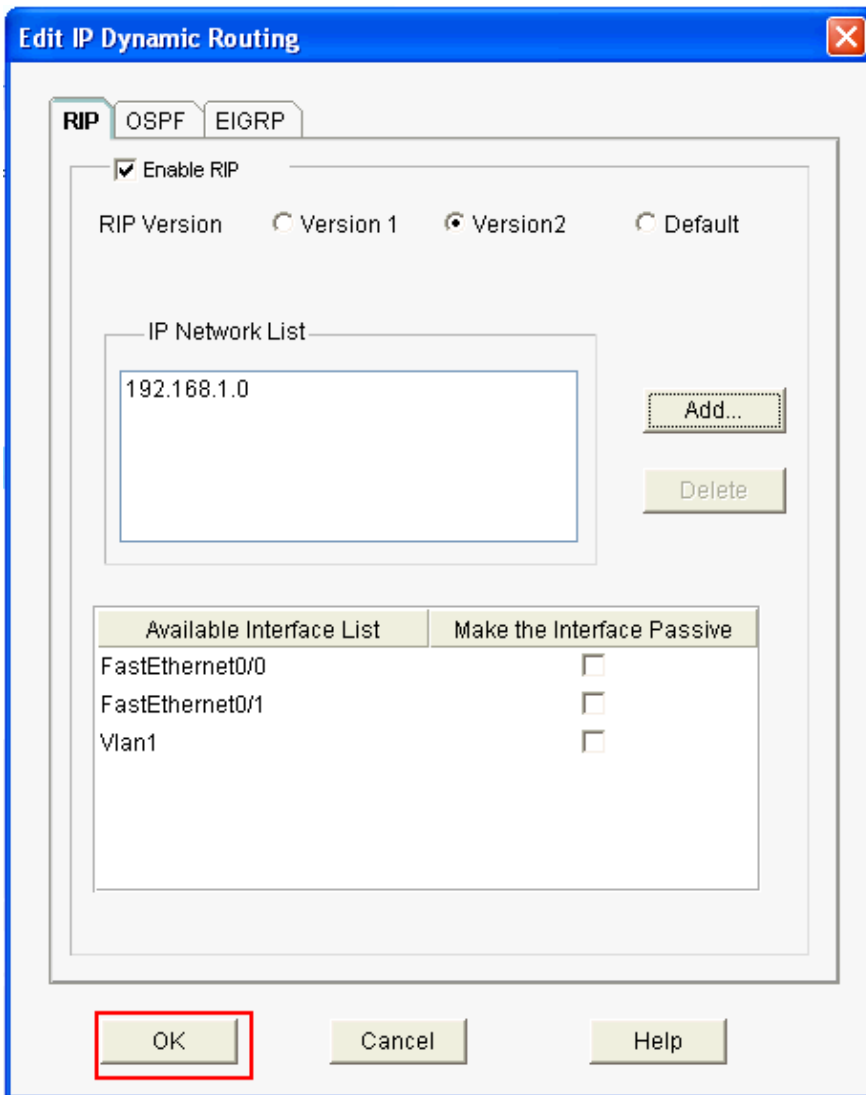2. Select the **RIP** and click **Edit**.

3. Check **Enable RIP**, choose the RIP version, and click **Add**.

4. Specify the Network address to be advertised.
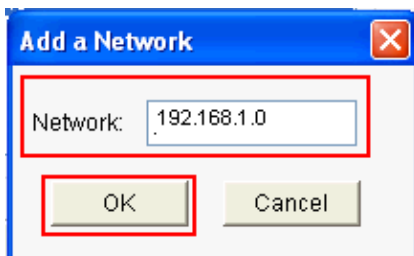
5. Click **OK**.

6. Click **Deliver** in order to transfer the commands to the router.
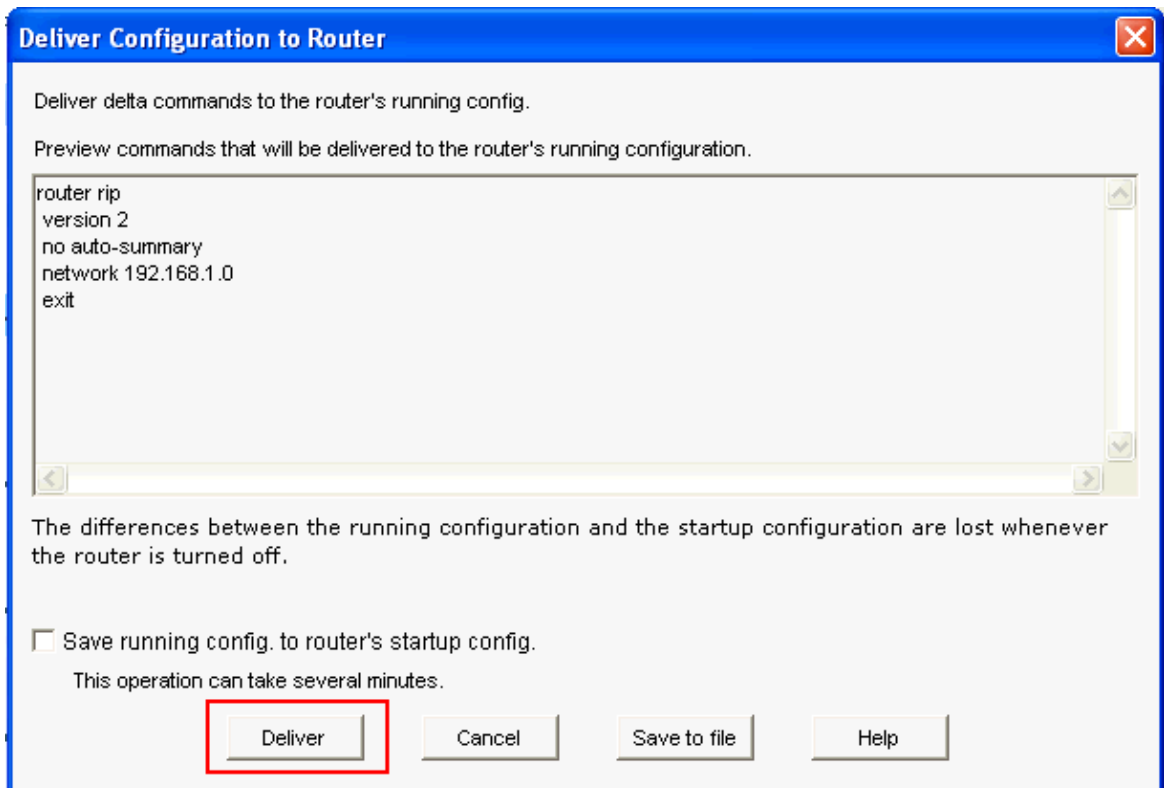
This window shows the dynamic RIP routing configuration:
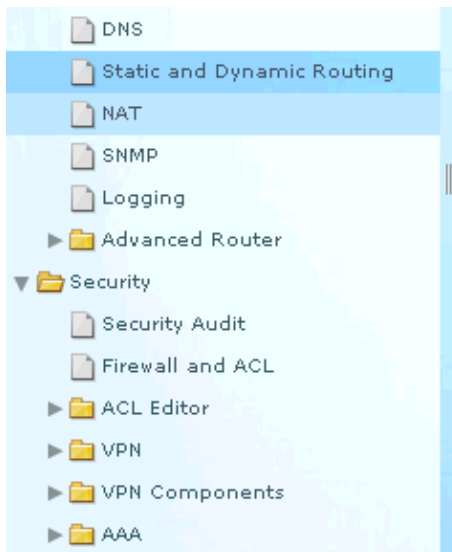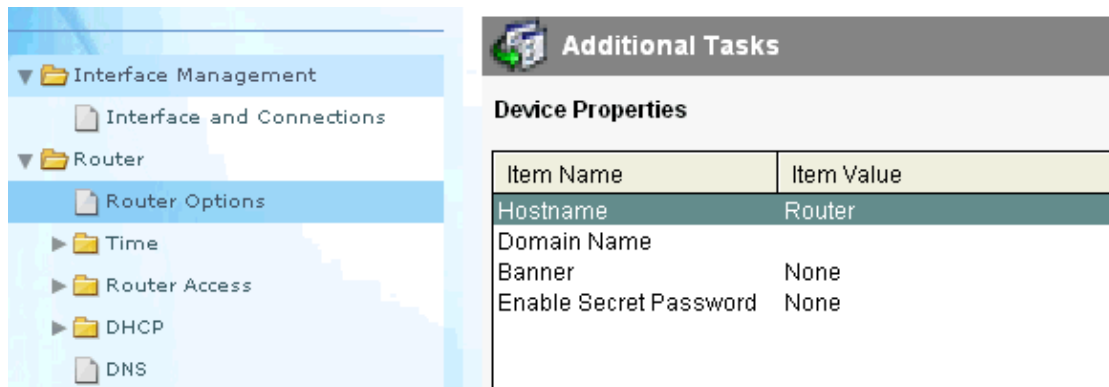
Miscellaneous Configuration

Perform these steps in order to configure the other basic settings in a Cisco router:
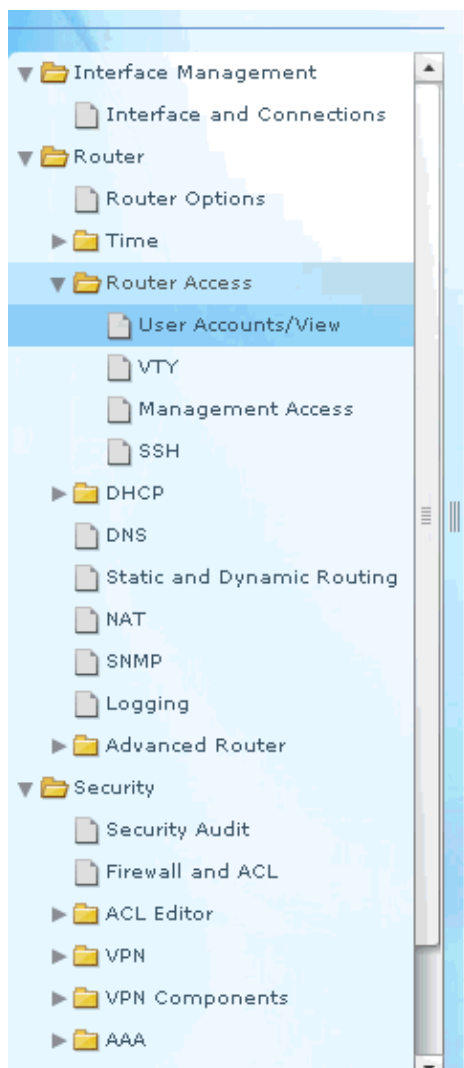
1. Choose **Configure** > **Router** > **Router Options** and click **Edit** if you want to change the Hostname, Domain Name, Banner, and Enable Secret Password properties for a router.

2. Choose **Configure** > **Router Access** > **User Accounts/View** in order to add/edit/delete the User Accounts to the router.
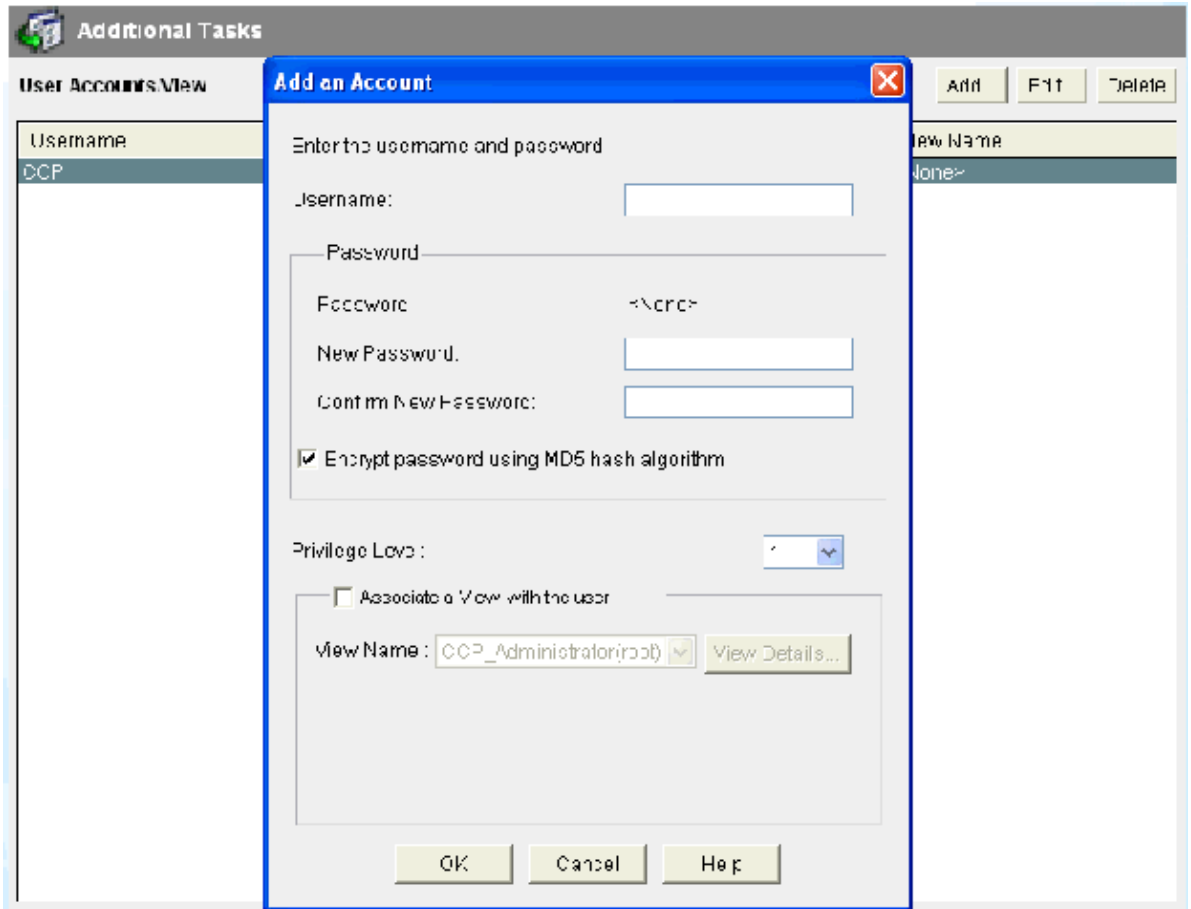
3. Choose **Configure > Utilities > Save Running Config to PC** in order to save the configuration to the NVRAM of the router as well as the PC and to reset the current configuration to default (factory) settings.

Note: In order to use CCP to restore the configuration file stored on a computer to a router or to backup the configuration file from a router to a computer, access the Configuration Editor, and click **I agree**. In the Configure window, choose **Import configuration from PC**, and then click the **replace running configuration** button.
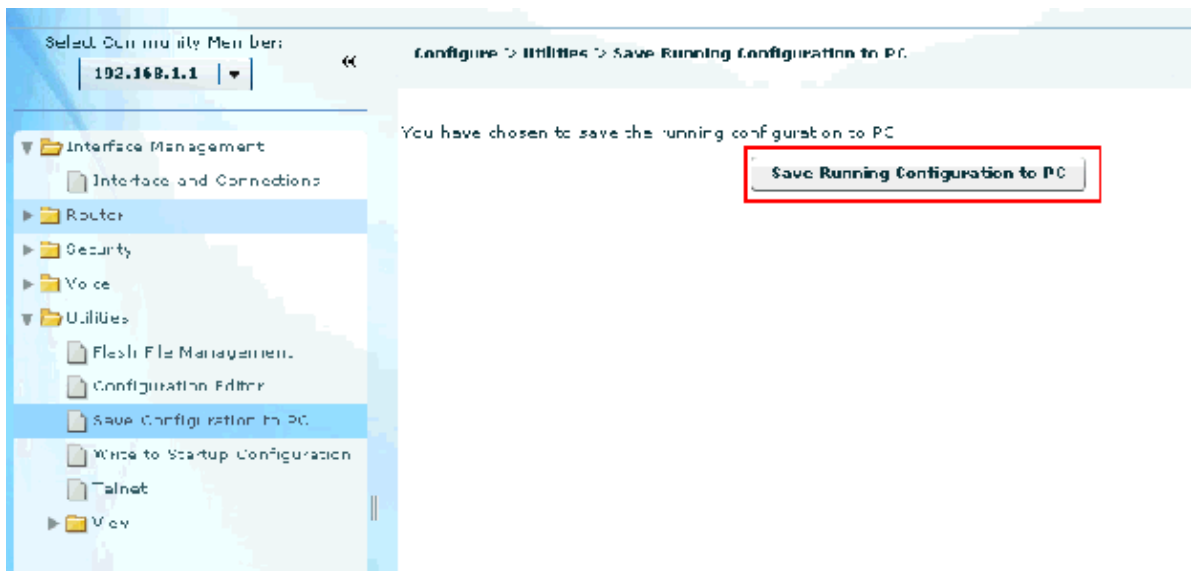
CLI Configuration

Router Configuration

```
Router#show run
Building configuration...

Current configuration : 2525 bytes

!

version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption

!

hostname Router

!

boot-start-marker
boot-end-marker

!

no logging buffered
enable password cisco

!

no aaa new-model

!

resource policy

!
!
!

ip cef

!
!
!


!--- RSA certificate generated after you enable the
!--- ip http secure-server command.

crypto pki trustpoint TP-self-signed-2401602417
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-2401602417
 revocation-check none
 rsakeypair TP-self-signed-2401602417

crypto pki certificate chain TP-self-signed-2401602417
 certificate self-signed 01
  30820248 308201B1 A0030201 02020101 300D0609 2A864886 F70D0101 04050030
  31312F30 2D060355 04031326 494F532D 53656C66 2D536967 6E65642D 43657274
  69666963 6174652D 32343031 36303234 3137301E 170D3130 30353139 30393031
  31315A17 0D323030 31303130 30303030 305A3031 312F302D 06035504 03132649
  4F532D53 656C662D 5369676E 65642D43 65727469 66696361 74652D32 34303136
```

```
   30323431 3730819F 300D0609 2A864886 F70D0101 01050003 818D0030 81890281
   8100CD35 A3A6E322 9B6005DA A0FF26C2 8A0DC5AF 27B38F3B DBF2BF58 D8F2655D
   31115681 EC8BC750 03FE3A25 0F79DC74 3A839496 CB9486F1 A1F5BF43 D92BA7AF
   3C72A57B D8D37799 50493588 A5A18F7F 27955AB0 AC36B560 3BE9F648 A4F6F41F
   B9E9C5E6 F9570DEB 5555FDED 9593BD00 5ABB30CD D3B9BDFA F570F987 651652CE
   3D310203 010001A3 70306E30 0F060355 1D130101 FF040530 030101FF 301B0603
   551D1104 14301282 10526F75 7465722E 70616D6D 692E636F 6D301F06 03551D23
   04183016 80146A0A C2100122 EFDA58AB C319820D 98256622 52C5301D 0603551D
   0E041604 146A0AC2 100122EF DA58ABC3 19820D98 25662252 C5300D06 092A8648
   86F70D01 01040500 03818100 83B0EC8C 6916178F 587E15D6 5485A043 E7BB258D
   0C9A63F2 DA18793D CACC026E BC0B9B33 F8A27B34 5BD7DD7F FCECA34F 04662AEC
   07FD7677 A90A8D1C 49042963 C2562FEC 4EFFF17C 360BF88A FEDC7CAA AE308F6C
   A5756C4A F574F5F3 39CE14AE BAAEC655 D5920DD0 DA76E296 B246E36E 16CFBC5A
   00974370 170BBDAD C1594013
        quit
```

```
!
!
!
!
!
!
!
!
!--- Create a user account named ccpccp with all privileges.

username ccpccp privilege 15 password 0 cisco123
archive
 log config
  hidekeys


!
!
!
!
!
!
!--- The LAN interface configured with a private IP address.

interface FastEthernet0/0
 description $ETH-LAN$
 ip address 192.168.1.1 255.255.255.0


!--- Designate that traffic that originates from behind
!--- the interface is subject to Network Address Translation (NAT).

 ip nat inside
 ip virtual-reassembly
 duplex auto
 speed auto


!
!--- This is the LAN interface configured with a routable (public) IP address.

interface FastEthernet0/1
 description $ETH-WAN$
 ip address 172.16.1.1 255.255.255.0

!--- Designate that this interface is the
!--- destination for traffic that has undergone NAT.
```

```
ip nat outside
 ip virtual-reassembly
duplex auto
 speed auto



!
!
!--- RIP version 2 routing is enabled.

router rip
 version 2
 network 192.168.1.0
 no auto-summary

!--- This is where the commands to enable HTTP and HTTPS are configured.

ip http server
ip http authentication local
ip http secure-server


!
!--- This configuration is for dynamic NAT.
!



!--- Define a pool of outside IP addresses for NAT.

ip nat pool pool 10.10.10.1 10.10.10.100 netmask 255.255.255.0

!--- In order to enable NAT of the inside source address,
!--- specify that traffic from hosts that match access list 1
!--- are NATed to the address pool named pool1.

ip nat inside source list 1 pool pool1


!
!--- Access list 1 permits only 122.168.1.0 network to be NATed.

access-list 1 remark CCP_ACL Category=2
access-list 1 permit 192.168.1.0 0.0.0.255


!
!--- This configuration is for static NAT
!--- In order to translate the packets between the real IP address 10.10.10.1 with TCP
!--- port 80 and the mapped IP address 172.16.1.1 with TCP port 500.
!

ip nat outside source static tcp 10.10.10.1 8080 172.16.1.1 80 extendable

!
!




!
!
!--- The default route is configured and points to 172.16.1.2.

ip route 0.0.0.0 0.0.0.0 172.16.1.2
```

```
!
!
!
!

control-plane

!
!
!
!
!
!
!
!
!

line con 0
line aux 0

!--- Telnet enabled with password as cisco.

line vty 0 4
 password cisco
 transport input all
line vty 5 15
 password cisco
 transport input all

!
!
!

end
```

Verify

Choose **Configure > Interface & Connections > Edit Interface Connections > Test Connection** in order to test the end−to−end connectivity. You can specify the remote end IP address if you click the **User−specified** radio button.
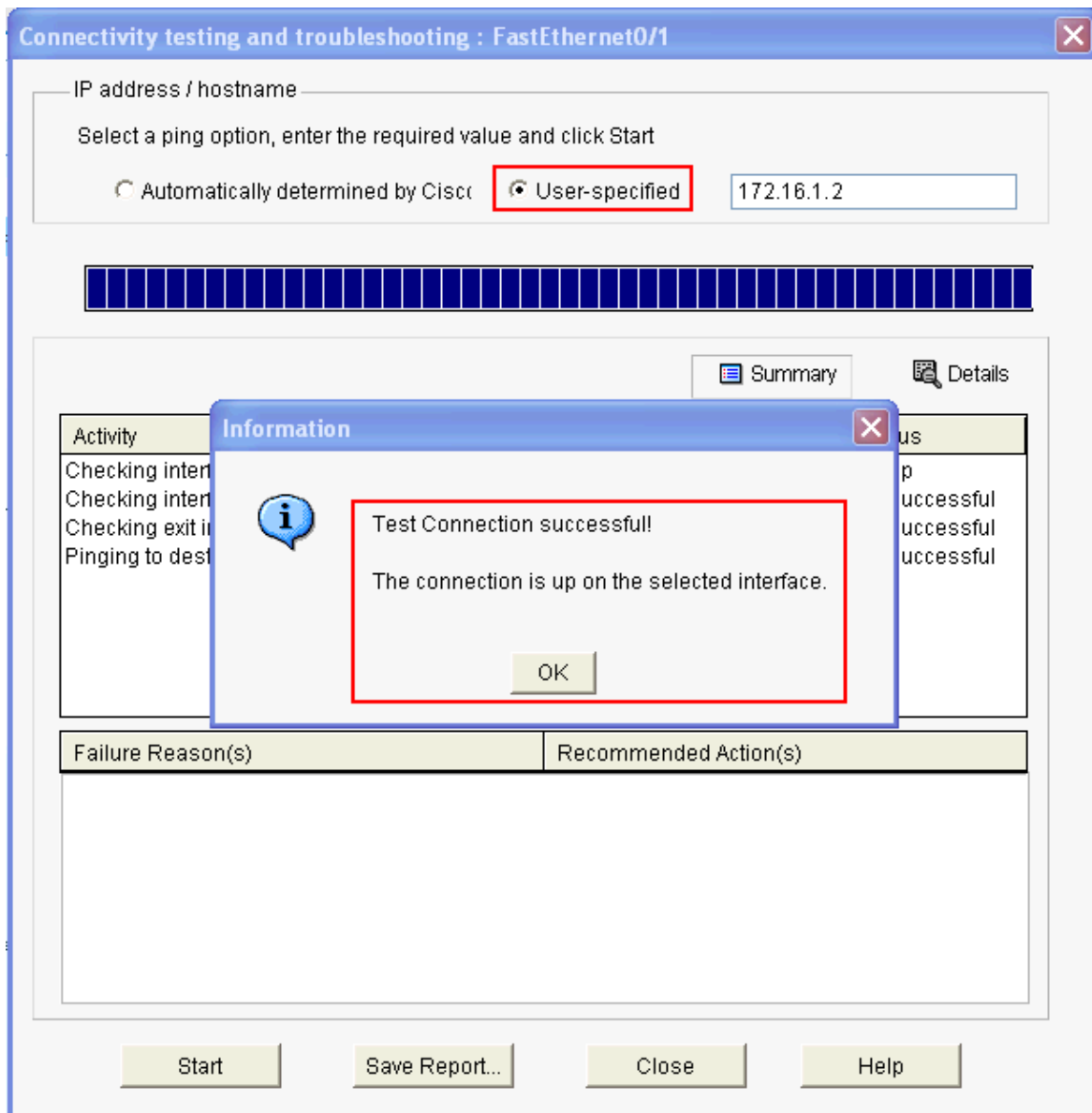
Troubleshoot

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.
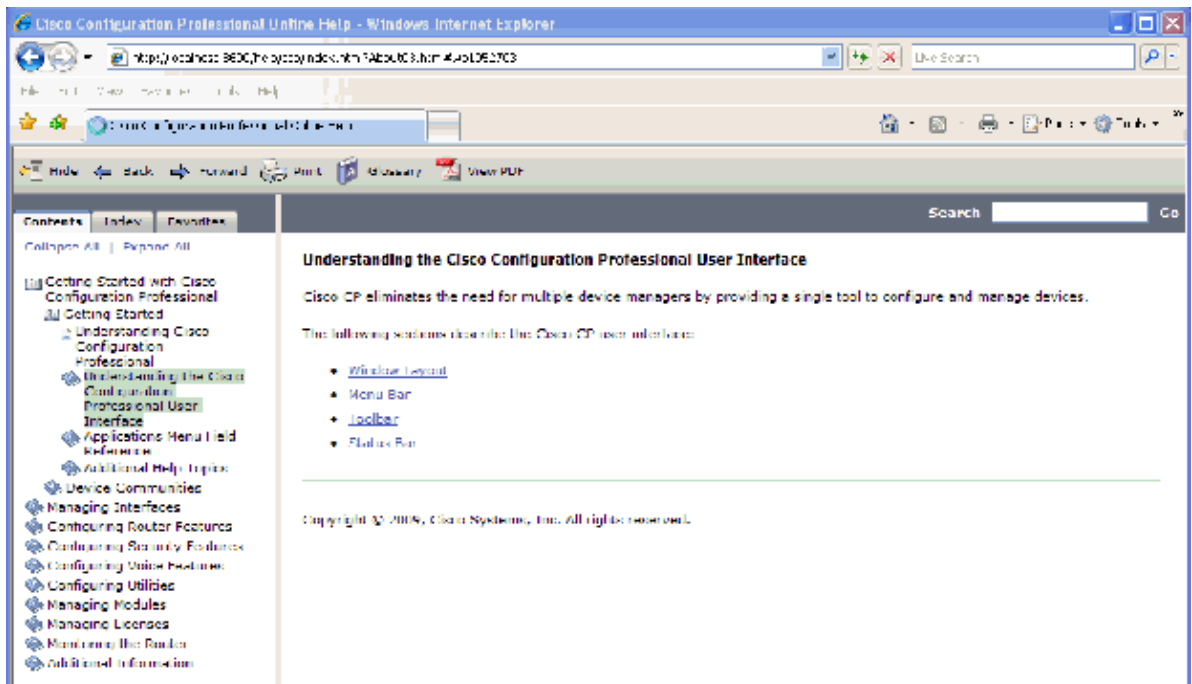
Note: Refer to Important Information on Debug Commands before you issue debug commands.

You can use these options in order to troubleshoot:

- Choose **Help** > **About this Router** in order to view the hardware and software details of the router.
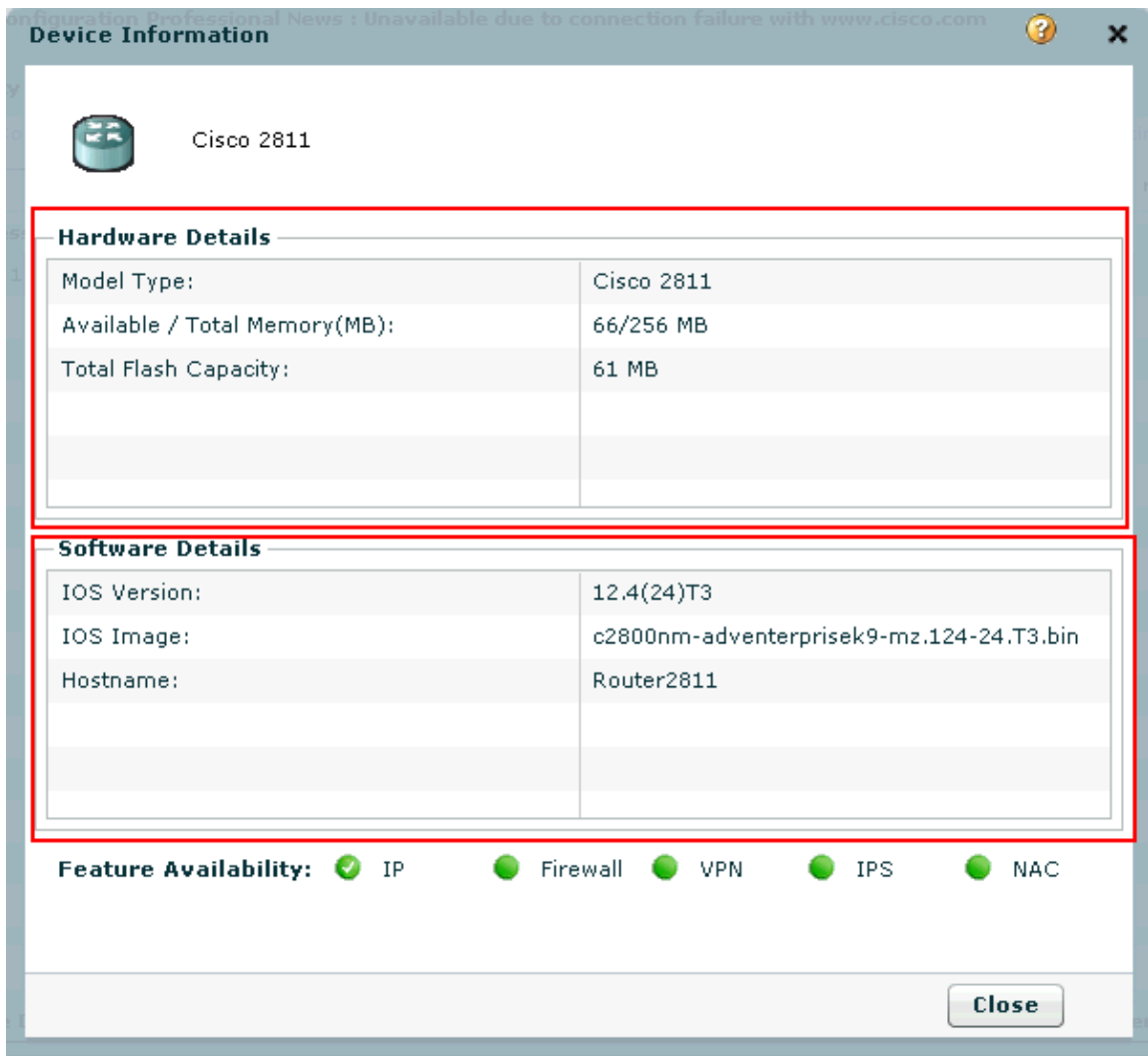
- The **Help** option provides information about the various available options in the SDM for the configuration of routers.

Password Recovery Procedure for Router

The user can change the router's user name and password through Cisco CP. Use this procedure in order to recover the password.

Perform these steps in order to change the user name and password of the router:

1. Create a new temporary user account, and then log in to the temporary user account.
2. Change the user name and password of the main user account (that is, the user account of the router on which you want to change the user name and password) in your Cisco CP.
3. Log out from the temporary account and log in to the main user account.
4. Delete the temporary user account after you change the password of the main account.

Related Information

- **Cisco Configuration Professional Quick Start Guide**
- **Cisco Product Support Page – Routers**
- **NAT Support Page**
- **Technical Support & Documentation – Cisco Systems**